भारतीय मानक
Indian Standard

IS 5034 : 2022
ISO 5431 : 2013

चमड़ा — नम नीलवर्ण बकरी की त्वचा — विशिष्टि

(दूसरा पुनरीक्षण)

Leather — Wet Blue Goat Skin — Specification

(Second Revision)

ICS 59.140.30

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March 2022 **Price Group 5**

Leather, Tanning Material and Allied Products Sectional Committee, CHD 17

NATIONAL FOREWORD

This Indian Standard (Second Revision) which is modified adoption of ISO 5431 : 2013 'Leather — Wet blue goat skins — Specification' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on recommendation of the Leather, Tanning Materials and Allied Products Sectional Committee and approval of the Chemical Division Council.

Chrome tanned goat skin in wet-blue condition is known in trade as wet-blue goatskin. In this condition goatskin is stored, transported or exported and serves as an ideal starting material for processing it further into finished leather.

IS 5034 was first published in 1968. During the first revision in 1987, changes were made in the requirements of *p*H of water extracts, shrinkage temperature and the test method for determining the fungicidal efficacy. The period for which the leathers are expected to inhibit mould growth was also specified. Further, the appendices on methods of test for moisture content, *p*H of water extract and shrinkage temperature were deleted and reference was made to the methods prescribed in IS 582 and IS 5914. The second revision has been undertaken to harmonize with the latest ISO standard ISO 5431 : 2013.

The major changes in this revision are:

a) Normative references updated;

b) Chemical requirements updated; and

c) Substituted the previous title with the ISO title.

However, certain modifications due to particular needs of Indian leather industry have been made, which have been mentioned in National Annex A.

Except the deviations identified in National Annex A, the text of ISO Standard has been approved as suitable for publication as an Indian Standard. Certain terminologies and conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.

b) Comma (,) has been used as a decimal marker, while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted standard, references appear to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards, which are to be substituted in their respective places, are listed below along with their degree of equivalence for the editions indicated:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 4045 Leather — Chemical tests — Determination of *p*H and difference figure	IS 582 (Part 9) : 2022/ISO 4045 : 2018 Methods of chemical testing of leather: Part 9 Determination of *p*H and difference figure	Identical with ISO 4045 : 2018
ISO 4684 Leather — Chemical tests — Determination of volatile matter	IS 582 (Part 1) : 2017/ISO 4684 : 2005 Methods of chemical testing of leather: Part 1 Determination of volatile matter (*second revision*)	Identical with ISO 4684 : 2005
ISO 5398-1 Leather — Chemical determination of chromic oxide content — Part 1: Quantification by titration	IS 582 (Part 10/Sec 1) : 2022/ISO 5398-1 : 2018 Methods of chemical testing of leather: Part 10 Determination of chromic oxide content Section 1 Quantification by titration	Identical with ISO 5398-1 : 2018

(*Continued on third cover*)

Indian Standard

LEATHER — WET BLUE GOAT SKIN — SPECIFICATION

(Second Revision)

1 Scope

This International Standard specifies requirements, methods of sampling and methods of test for wet blue leather produced from goat skins tanned without hair and with the use of basic chromium sulfate as the primary tanning agent.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 2418, *Leather — Chemical, physical and mechanical and fastness tests — Sampling location*

ISO 3380, *Leather — Physical and mechanical tests — Determination of shrinkage temperature up to 100 °C*

ISO 4045, *Leather — Chemical tests — Determination of pH*

ISO 4684, *Leather — Chemical tests — Determination of volatile matter*

ISO 5398-1, *Leather — Chemical determination of chromic oxide content — Part 1: Quantification by titration*

ASTM D4576, *Standard test method for mold growth resistance of wet blue*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
cured
preserved temporarily from putrefaction until it can be tanned

Note 1 to entry: Any method of curing, including wet or dry salting or drying, is included

3.2
pigmentation
colouration produced by fungi growing on wet blue chrome leather

Note 1 to entry: The colouration produced by fungi will normally be black, white, green or yellow but can also be pink or violet.

4 Requirements

4.1 Raw material

Wet blue goat skins shall be processed from cured or fresh goat skins.

4.2 Tanning

After pretanning operations, the skins shall be tanned with basic chromium sulfate as the primary tanning agent. The cut cross-section shall be such that the skin is completely penetrated by the bluish colour of the chromium sulfate when examined visually. Tanning shall be carried out at a pH of 3,0 or above.

4.3 Fungicidal additives

Fungicides shall be used to inhibit mould growths in the wet blue goat skins.

NOTE 1 Fungicides used to inhibit mould growth and pigmentation in wet blue goat skins should be effective and should not cause a health hazard. The types of fungicide used and their dosage should preferably be agreed between the purchaser and the supplier

NOTE 2 Fungicides should preferably be applied in quantities appropriate to ensure storage for up to 4 months at the temperature and humidity prevailing during storage or transportation.

4.4 Presentation

Wet blue goat skins shall be well fleshed, and the grain side shall be free from hair, including short hair and fine hair. The size and grading shall be as agreed between the interested parties.

NOTE The skins should preferably have a tight grain and be free from creases, drum folds and stains caused by iron salts. At least 95 % of the number of pieces in a lot should be free from stains caused by chromium salts, and the aggregate of the stained area in any one piece should not exceed 10 % of the total area of the piece.

4.5 Shrinkage temperature

The shrinkage temperature shall not be less than 95 °C, when determined using the method specified in ISO 3380.

4.6 Chemical requirements

Wet blue goat skins shall comply with the requirements given in Table 1.

Table 1 — Chemical requirements

Characteristic	Requirement
Volatile matter, %	As agreed between the interested parties
pH of water extract (minimum)	3,5

NOTE A minimum shrinkage temperature of 95 °C would normally require minimum chromic oxide content of 3,0 % relative to the dry mass, as determined by the method given by ISO 5398-1. Once the chromic oxide content has been determined in this way, it can be used to estimate how much more chromic oxide has to be added to achieve the desired level (i.e. the extent of further rechroming)

5 Sampling

5.1 Sampling for routine testing

The number and location of laboratory samples taken for routine testing shall be as agreed between the interested parties.

5.2 Sampling in case of dispute

The number of samples shall be as given in Table 2 and the location shall be as specified in ISO 2418.

Table 2 — Number of samples to be taken in cases of dispute

Number of skins	Number of samples
Up to 100	3
101 to 300	4
301 to 500	5
501 to 700	6
701 and over	7

5.3 Preparation of samples

Prepare samples by wiping off excess water and keeping wrapped in filter paper for 30 min without applying any extra pressure.

6 Method of test

6.1 Visual tests

Examine the wet blue goat skins for uniformity of colour of the surface, penetration of chromium sulfate, absence of short hair and cleanness of the flesh side.

6.2 Shrinkage temperature

Determine the shrinkage temperature by the method specified in ISO 3380.

6.3 Volatile matter

Determine the volatile matter by the method specified in ISO 4684.

6.4 pH of the water extract

Determine the pH of the water extract by the method specified in ISO 4045.

6.5 Effectiveness of the fungicide

Determine the effectiveness of the fungicide by the method specified in ASTM D4576.

7 Packaging and Marking

7.1 Packaging

Wet blue goat skins shall be packaged suitably as agreed between the interested parties so as to preserve their original wet condition.

7.2 Marking

The following particulars shall be marked on each package or on a label attached to the package:

a) the type of material (i.e. wet blue goat skin), and the trade name or brand name, if any;

b) the name and address of the manufacturer;

c) the month and year of the tanning;

d) the number of skins;

e) any other details desired by the purchaser.

National Annex A

(*National Foreword*)

<table>
<tr><th>Clause/Subclause</th><th>Modifications</th></tr>
<tr><td>2 Normative references</td><td>Delete the last two references:
ISO 5398-1 Leather — Chemical determination of chromic oxide content — Part 1: Quantification by titration
ASTM D4576 Standard test method for mold growth resistance of wet blue
Add the following references:
IS 582 Methods of chemical testing of leather (<i>first revision</i>)
IS 582 (Part 10/Sec 1) : 2021/ISO5398-1 : 2018 Leather — Chemical determination of chromic oxide content: Part 1 Quantification by titration
IS 16296 (Part 2) Leather — Chemical determination of chromic oxide content: Part 2 Quantification by colorimetric determination</td></tr>
<tr><td>4.3 Fungicidal additives</td><td>Add NOTE 3:
Restricted chemicals shall be avoided.</td></tr>
<tr><td>4.6 Chemical requirements</td><td>Replace existing table by the following:
Table 1 Chemical Requirements
<table>
<tr><th>Characteristic</th><th>Requirement</th><th>Test method</th></tr>
<tr><td>Moisture content, percent by mass</td><td>As agreed between interested parties</td><td>LC:2 of IS 582</td></tr>
<tr><td>Volatile matter, percent by mass</td><td>As agreed between interested parties</td><td>IS 582 (Part 1)</td></tr>
<tr><td>Chromic oxide (as Cr_2O_3), percent of dry mass, <i>Min</i></td><td>3.0</td><td>IS 582 (Part 10/Sec 1) : 2021/ISO 5398-1 : 2018 or IS 16296 (Part 2)</td></tr>
<tr><td><i>p</i>H of water extract, <i>Min</i></td><td>3.5</td><td>IS 582 (Part 9) : 2021/ISO 4045 : 2018 (doc:CHD/17/15410)</td></tr>
</table></td></tr>
<tr><td>4.6 Chemical requirements
NOTE</td><td>Delete</td></tr>
<tr><td>5 Sampling</td><td>Replace the existing clause with the following:
5 Sampling and criteria for conformity
5.1 For the purpose of ascertaining the conformity of goatskins in a lot to this standard, the scale of sampling and criteria for conformity shall be as prescribed in National Annex B.
5.2 Preparation of samples
Prepare samples by wiping off excess water and keeping wrapped in filter paper for 30 min without applying any extra pressure.</td></tr>
<tr><td>6.3 Volatile matter
6.4 <i>p</i>H of water extract</td><td>Delete</td></tr>
<tr><td>6.5 Effectiveness of fungicide</td><td>Replace existing sentence by the following:
The fungicide treated wet-blue skin shall show no mould growth as pigmentation when examined under the binocular microscope at ×30 after subjecting it to the test prescribed in National Annex C.</td></tr>
<tr><td>End of document</td><td>Insert National Annex B.</td></tr>
</table>

National Annex B

(*Clause* 5.1)

SAMPLING AND CRITERIA FOR CONFORMITY

B-1 LOT

B-1.1 All the chrome tanned goatskins in wet-blue condition in a consignment processed from the same type of raw materials shall constitute a lot.

B-1.1.1 For ascertaining the conformity of a lot to the requirements of this specification, samples shall be tested from each lot separately.

B-1.2 The number of pieces to be selected in a sample from a lot shall depend upon the size of the lot and shall be in accordance with Table 2.

Table 2 Number of Goatskin Pieces to be Selected from a Lot and Permissible Number of Defectives

(*Clause* B-1.2)

No. of Pieces in the Lot	For Visual Examination		No. of Pieces to be Selected for Testing Fungicidal Efficacy
	No. of Pieces to be Selected in the Sample	Permissible Number of Defectives	
(1)	(2)	(3)	(4)
Upto 25	5	0	2
26 to 50	8	0	3
51 to 100	13	1	3
101 to 300	20	2	5
301 and above	32	3	8

B-1.3 At least 10 percent of the packages shall be opened and an equal number of goatskins shall be selected at random from each of the packages to constitute the sample of size given in col 2 of Table 2.

B-2 POSITION OF SAMPLING

The position for taking out samples for various tests prescribed in this standard shall be in accordance with IS 5868.

B-3 CRITERIA FOR CONFORMITY

B-3.1 All the goatskins in the sample selected according to **B-1.2** shall be examined for tanning and finish. A piece which fails to satisfy any of the requirements for tanning and finish shall be called a defective.

B-3.1.1 A lot shall be considered as having satisfied the requirements of tanning and finish, if the number of defective pieces found as in **B-3.1** does not exceed the corresponding permissible number of defectives given in col 3 of Table 2.

B-3.2 A sub-sample of goatskin pieces as given in col 4 of Table 2 shall be selected from those examined for tanning and finish (**B-3.1**) and each of the selected pieces shall be tested for fungicidal efficacy. A lot shall be considered to have satisfied the requirement for fungicidal efficacy if all the sample pieces selected for this purpose pass the test.

B-3.3 For moisture content, two independent determinations shall be made. For each of the other characteristics specified in Table 1, one test shall be conducted. The lot shall be deemed to be conforming to the requirements for these characteristics if all the test results satisfy the corresponding requirements given in col 3 of Table 1.

National Annex C

(*Clause* 6.5)

TEST FOR FUNGICIDAL EFFICACY

C-1 OUTLINE OF THE METHOD

C-1.1 Untreated leathers as well as those leathers treated with agents to promote mould resistance are smeared, sprayed or swabbed with mixed spore suspension of species of mould found in tanned leathers and the fungicidal efficacy of such leathers is evaluated.

C-1.2 Conditions prescribed for sampling in this test method correspond to the conditions to which the leathers are subjected in normal storage and transit.

C-2 SAMPLE

C-2.0 The sample shall be treated as follows:

C-2.1 One portion of the sample (A) is kept for seven days at 45 ± 2 °C in an oven with forced air circulation and leached by drumming for three hours in about 30 times their mass of water at 27 ± 2 °C. The leached samples are then drained and blotted.

C-2.2 The second portion (B) of the sample is tested as received.

C-2.3 Cut four strips of 50 × 10 mm test pieces from the treated as well as untreated samples.

C-3 APPARATUS

C-3.1 Containers for Keeping Test Pieces — Any suitable glassware which can be conveniently stoppered, namely, jars, desiccators, glass tanks, etc., with greased covers to preclude loss of water vapour during the test may be used. The vessel may contain water at the bottom or cotton wool or clean sand previously saturated with boiling water. This is done to obtain 100 percent relative humidity at approximately 30°C.

NOTE — The same vessel shall not be used for simultaneous testing of samples treated with different fungicides.

C-3.2 Incubator — One, capable of maintaining 45 ± 2 °C with forced air circulation and another capable of maintaining 25 ± 2 °C.

C-3.3 Binocular Microscope — Capable of ×30 magnification.

C-4 REAGENTS

C-4.1 Standard Mixed Spore Suspension — A standard mixed spore sand suspension comprising of the following species of moulds shall be used.

Any three of the following Aspergillus species:

Aspergillus niger

Aspergillus flavus

Aspergillus terreus

Aspergillus nidulans

Aspergillus wentii, and

Any four of the following Penicillium species:

Penicillium frequentans

Penicillium purpurogenum

Penicillium rubrum

Penicillium helicium

Penicillium lapidosum

Penicillium chrysogenum

Penicillium spinulosum

and, any ONE of the following other species:

Paecilomyces variotii

Mucor mucedo

Trichoderma viride

With each batch of such a suspension, a list showing the organisms incorporated therein, the source of collection and the date prior to which the culture is to be used shall be furnished.

C-5 PROCEDURE

C-5.1 Dampen the treated test pieces (*see* **C-2.3**) with sufficient water for about five minutes, smear, spray or swab with mixed spore suspension and then subsequently suspend them above a free water surface in a suitable covered vessel as described under **C-3.1**.

C-5.2 Viability Control

Simultaneously, tests shall be carried out with control test pieces of leather not treated with fungicide. If this untreated material fails to show any abundant growth of the test organism, the test shall be considered inconclusive and whole test be repeated.

C-5.3 Incubation

Incubate the test pieces for 30 days at 25 ± 2 °C and 95 to 100 percent relative humidity in the incubator (*see* **C-3.2**), or relative humidity cabinet kept in the dark.

C-5.4 The test pieces shall be examined at frequent intervals at least twice a week under the microscope at ×30 and the date of first appearance of mould growth or pigmentation shall be noted.

C-6 ASSESSMENT OF FUNGICIDAL EFFICACY

C-6.1 Presence or absence of mould growth or pigmentation as well as its extent at the end of the incubation period may be assessed visually and indicated in the test report as vigorous (entire surface of test piece covered with mould growth or pigmentation in test period), moderate (three-fourths of the surface of test piece covered with mould growth or pigmentation in test period), very slight (one-quarter of the surface of test piece covered with mould growth or pigmentation in test period), and nil (no mould growth or pigmentation in test period).

C-6.1.1 The test report shall also state the following:

a) The number of samples tested;

b) Nature of the samples tested (A) or (B) (**C-2.1** or **C-2.2**);

c) The date of incubation; and

d) The date of first appearance of mould growth or pigmentation.

National Annex D

(*National Foreword*)

D-1 BIS CERTIFICATION MARKING

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the product(s) may be marked with the Standard Mark.

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The technical committee has reviewed the provisions of the following International Standard referred in this adopted standard and has decided that it is acceptable for use in conjunction with this standard:

International Standard	*Title*
ISO 2418	Leather — Chemical, physical and mechanical and fastness tests — Sampling location
ISO 3380	Leather — Physical and mechanical tests — Determination of shrinkage temperature up to 100 °C
ASTM D4576	Standard test method for mold growth resistance of wet blue

In this modified adopted standard, reference appears to certain International Standards where the standard atmospheric conditions to be observed are stipulated which are not applicable to tropical/ subtropical countries. The applicable standard atmospheric conditions for Indian conditions are 27 ± 2 °C and 65 ± 5 percent, relative humidity and shall be observed while using this standard.

The standard also makes a reference to BIS Certification Marking of the product, details of which are given in National Annex D.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 ‘Rules for rounding off numerical values (*revised*).’ The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the website- www.bis.gov.in or www.standardsbis.in.

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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